QLogic 20-port and 10-port 4 Gb SAN Switch Modules
IBM BladeCenter at-a-glance guide

The QLogic 20-port and 10-port 4 Gb SAN Switch Modules enable high performance 4 Gb Fibre Channel SAN solutions, and allow IBM BladeCenter integration with any open-standards-based storage area networks utilizing full fabric switching functionality. These two switches have almost the same features and functions except for the number of activated ports: the 10-port switch has 10 activated ports and the 20-port switch has 20 activated ports.

Figure 1 shows the QLogic 4 Gb SAN Switch Module.

Figure 1. QLogic 4 Gb SAN Switch Module for IBM BladeCenter

Did you know?

The switch connects to the midplane directly, without having to use cables or small form-factor pluggable (SFP) modules. By eliminating these components for up to 14 servers, the resulting savings alone cover the BladeCenter chassis investment.

The module is licensed to operate in either full-fabric mode or intelligent pass-thru mode. The module allows BladeCenter integration with any open-standards-based SAN, whether it is an enterprise open-system fabric functionality using the full-fabric mode or the module with transparent switching functionality using the intelligent pass-thru mode.

Part number information

Table 1 shows the part number to order this module.

Table 1. Part number and feature code for ordering

Description	Part number	Feature code
QLogic 20-port 4 Gb SAN Switch Module for IBM BladeCenter	43W6725	2987
QLogic 10-port 4 Gb SAN Switch Module for IBM BladeCenter	43W6724	2986

The part number includes the following items:

- One QLogic 20-Port or 10-Port 4 Gb SAN Switch Module for IBM BladeCenter
- The Documentation CD
- The *IBM Important Notices* document

The switches come without small form-factor pluggable (SFP) transceivers, which must be ordered additionally. Table 2 lists the part numbers that are supported.

Table 2. Supported SFPs for the QLogic 4 Gb SAN Switch Module

Description	Part number	Feature code
4 Gbps SW SFP Transceiver	39R6475	4804
4 Gbps shortwave SFP Transceiver pair	26K7941	2410
4 Gbps 4 km longwave SFP Transceiver	23R1703	Not available
4 Gbps 4 km longwave SFP Transceiver 4 pack	23R1704	Not available
4 Gbps SW SFP Transceiver 4 Pack	22R4897	Not available
4 Gbps SW SFP Transceiver	22R4902	Not available

Features

The QLogic 4 Gb SAN Switch Modules have the following features:

- Six external autosensing (1, 2, or 4 Gbps) Fibre Channel ports that operate at a maximum of 4 Gbps

- 14 internal Fibre Channel ports that operate at a maximum of 4 Gbps

- Two internal full-duplex 100 Mbps Ethernet interfaces

- External ports that can be configured as F_ports (fabric ports), FL_ports (fabric loop ports), or E_ports (expansion ports)

- Internal ports that are configured as F_ports at 2 Gbps or 4 Gbps

- Power-on diagnostics and status reporting

- Fabric security for controlling management access (optional feature)

- Support for Non-Disruptive Code Load Activation (NDCLA)

- Registered State Change Notification (RSCN)

- Support for standards-based FC-SW2 interoperability

- Error detection
- Frame bundling
- Configurable Fabric Address Notification (FAN)
- Support for up to 239 switches depending on configuration

The following software features come with the switch module:

- QuickTools Web interface
- 20-port licensing (20-port version only)
- 10-port licensing (10-port version only)

The switch supports the following fabric management (all management connections go through the management module):

- Management methods:
    - Web interface through QuickTools
    - Command-line interface (CLI) through Telnet program
- Enterprise Fabric Suite 2007 application (for customers that already use this tool)
- Switch simple network management protocol (SNMP) agent: enables a network management workstation to receive configuration values, traffic information, and Fibre Channel failure data through SNMP and the Ethernet interface

For the QLogic 10-Port 4 Gb SAN Switch Module, the default port license assignments are 1 through 7 for internal ports (the first seven blade bays), and 0, 15, and 16 for external ports (the first three external ports - see Figure 4). Port license assignments can be changed to other available internal ports (8 through 14) or external ports (17, 18, or 19) by using the QLogic management tools.

Supported BladeCenter chassis and expansion cards

The QLogic 4 Gb SAN Switch Modules are supported in the IBM BladeCenter chassis as listed in Table 3.

Table 3. IBM BladeCenter chassis that support the QLogic 4 Gb SAN Switch Modules

I/O module	Part number	BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT	MSIM	MSIM-HT
QLogic 20-port 4 Gb SAN Switch Module for IBM BladeCenter	43W6725	N	Y	Y	Y**	Y†	Y	Y‡
QLogic 10-port 4 Gb SAN Switch Module for IBM BladeCenter	43W6724	Y*	Y	Y	Y**	Y†	Y	Y‡

Notes:

* The 10-port 4 Gb SAN Switch Module can be installed in the BladeCenter S; however, by doing so, you lose the ability to connect to the BladeCenter S Disk Storage Modules (DSMs). The Fibre Channel I/O module goes in place of the SAS I/O module that is needed to connect to the DSMs.

** When the I/O module is installed in a BladeCenter T unit, the internal ports operate up to 2 Gbps, and the external ports operate at speeds up to 4 Gbps.

† When the I/O module is installed in standard I/O bays of a BladeCenter HT unit, the internal ports operate up to 2 Gbps, and the external ports operate at speeds up to 4 Gbps.

‡ When the I/O module is installed in an MSIM-HT, the internal ports operate at 4 Gbps, and the external ports operate at 4 Gbps.

The BladeCenter chassis have the following bays:

● BladeCenter S, E, and T have four standard I/O bays (1, 2, 3, and 4)

● BladeCenter H has four standard I/O bays (1, 2, 3, and 4), two bridge bays (5 and 6), and four high-speed bays (7, 8, 9, and 10)

● BladeCenter HT has four standard I/O bays (1, 2, 3, and 4) and four high-speed bays (7, 8, 9, and 10)

The QLogic 4 Gb SAN Switch Modules fit in a standard I/O bay (bays 1-6) and, with the addition of the Multi-Switch Interconnect Module (MSIM) in the BladeCenter H, can also fit in a high-speed I/O bay (bays 7-10). The QLogic 4 Gb SAN Switch Modules are not supported with MSIM-HT in high-speed bays of the BladeCenter HT chassis.

The QLogic 4 Gb SAN Switch Modules support the expansion cards listed in Table 4. Table 4 also lists the chassis bays in which the switch modules must be installed when used with each expansion card.

Table 4. Expansion card support and Chassis I/O bay support

Supported expansion cards	Part number	Bay 1 (Standard)	Bay 2 (Standard)	Bay 3 (Standard)	Bay 4 (Standard)	Bay 5 (Bridge)	Bay 6 (Bridge)	Bay 7 (High-speed)	Bay 8 (High-speed)	Bay 9 (High-speed)	Bay 10 (High-speed)
QLogic 4 Gb SFF FC Expansion Card	26R0890	N	N	Y	Y	N	N	N	N	N	N
QLogic 4 Gb FC Expansion Card (CFFv)	41Y8527	N	N	Y	Y	N	N	N	N	N	N
Emulex 4 Gb FC Expansion Card (CFFv)	43W6859	N	N	Y	Y	N	N	N	N	N	N
QLogic 4 Gb FC Expansion Card (CIOv)	46M6065	N	N	Y	Y	N	N	N	N	N	N
QLogic 8 Gb FC Expansion Card (CIOv)	44X1945	N	N	Y	Y	N	N	N	N	N	N
Emulex 8 Gb FC Expansion Card (CIOv)	46M6140	N	N	Y	Y	N	N	N	N	N	N
QLogic Ethernet and 4 Gb FC Card (CFFh)	39Y9306	N	N	N	N	N	N	N	Y	N	Y
QLogic Ethernet and 8 Gb FC Card (CFFh)	44X1940	N	N	N	N	N	N	N	Y	N	Y

Note: When the I/O module is installed in a BladeCenter T chassis or in one of the standard I/O bays of a BladeCenter HT unit , the internal ports operate up to 2 Gbps, and the external ports operate at speeds up to 4 Gbps. When the I/O module is installed in an MSIM-HT, the internal ports operate at 4 Gbps and the external ports operate at 4 Gbps.

Popular configurations

The QLogic 4 Gb SAN Switch Modules can be used in various configurations.

Installation in standard switch bays

Figure 2 shows the QLogic 20-Port 4 Gb SAN Switch Module installed in standard I/O bays 3 and 4 in a BladeCenter E chassis. The chassis is connected to the IBM System Storage DS3400. The servers in the chassis each have compatible CFFv or CIOv Fibre Channel expansion cards.
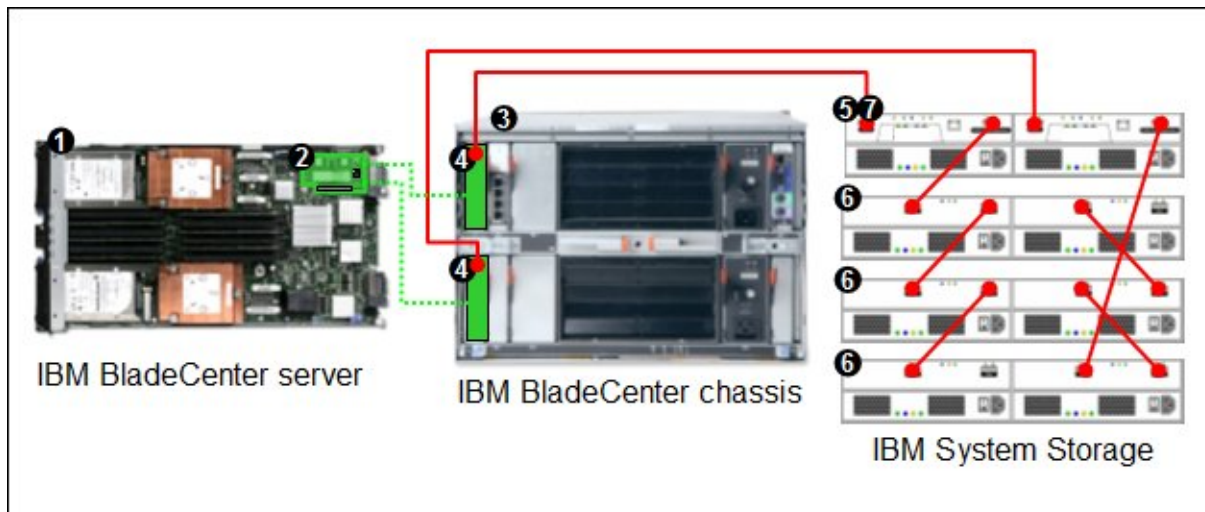

Figure 2. IBM BladeCenter connected to an external IBM System Storage DS3400 storage solution

Table 5 lists the parts that are used in this configuration.

Table 5. Components used as shown in Figure 2

Diagram reference	Part number / Machine type	Description	Quantity
❶	Varies	IBM BladeCenter HS22, HS21, or other supported server	1 to 14
❷	Varies	Supported CIOv or CFFv expansion card (see Table 4)	1 per server
❸	Varies	Supported BladeCenter chassis (see Table 3)	1
❹	43W6725	QLogic 20-Port 4 Gb SAN Switch Module	1 or 2
❺	1726-41X or 1726-42X	IBM System Storage DS3400 (Single or Dual Controller)	1
❻	1727	**Optional** IBM System Storage EXP3000 (Single or Dual ESM)	1 to 3
Not shown	39R6536	DS3000 Partition Expansion License	1

This configuration also requires cabling between the chassis and the storage server and between the storage server and expansion units. (The cable part numbers are not listed in the table.)

Installation in BladeCenter H high-speed switch bays

Figure 3 shows the QLogic 20-Port 4 Gb SAN Switch Module installed in MSIMs in the BladeCenter H chassis. The chassis is connected to the IBM System Storage DS3400. The servers in the chassis each have compatible CFFh Fibre Channel expansion cards.
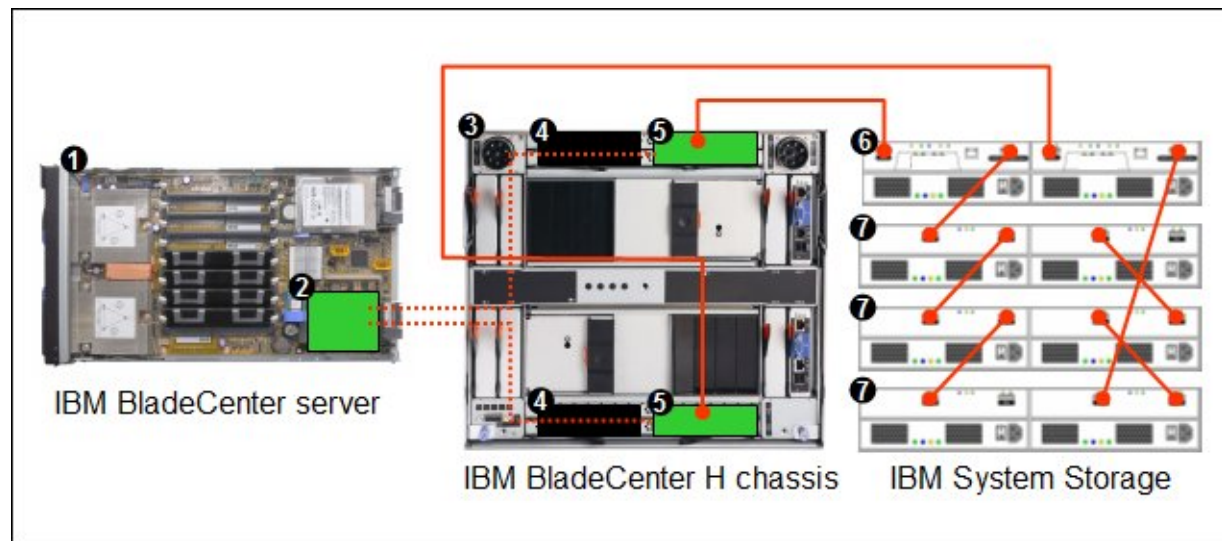

Figure 3. IBM BladeCenter H connected to an external IBM System Storage DS3400 storage solution

Table 6 lists the parts that are used in this configuration.

Table 6. Components used as shown in Figure 3

Diagram reference	Part number / machine type	Description	Quantity
❶	Varies	IBM BladeCenter HS22, HS21, or other supported server	1 to 14
❷	Varies	Supported CFFh expansion card (see Table 4)	1 per server
❸	8852	IBM BladeCenter H chassis	1
❹	39Y9314	Multi-switch Interconnect Module	1 or 2
❺	43W6725	QLogic 20-Port 4 Gb SAN Switch Module	1 or 2
❻	1726-41X or 1726-42X	IBM System Storage DS3400 (Single or Dual Controller)	1
❼	1727	Optional: IBM System Storage EXP3000 (Single or Dual ESM)	1 to 3
Not shown	39R6536	DS3000 Partition Expansion License	1

This configuration also requires cabling between the chassis and the storage server and between the storage server and expansion units. (The cable part numbers are not listed in the table.)

Connectors and LEDs

The front panel of the QLogic 4 Gb SAN Switch Module contains the following components, as shown in Figure 4:

- Information LEDs that display the status of the I/O module and its network connections.
- Six external Fibre Channel ports to connect Fibre Channel devices and switches. These ports are labeled 0, 15, 16, 17, 18, and 19 (from top to bottom) on the I/O module.
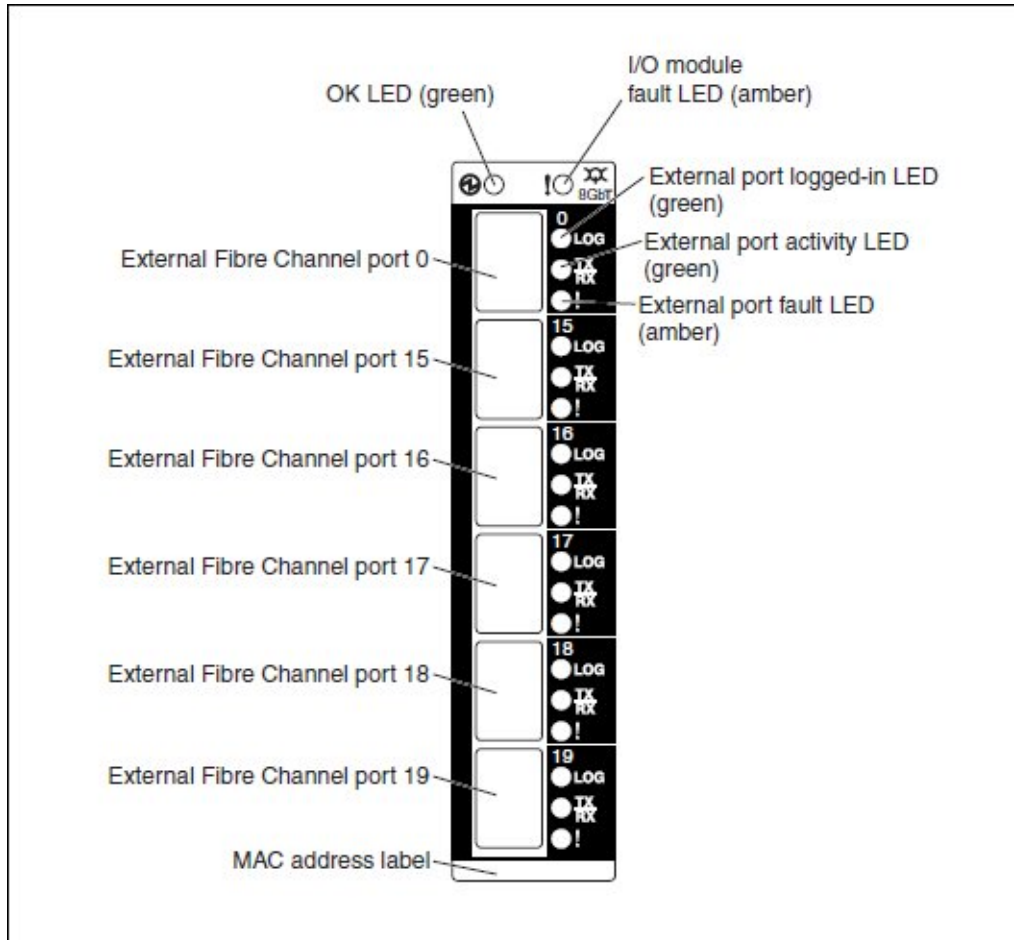

Figure 4. Front panel of the I/O module

Table 7 lists the LEDs on the front panel and their meanings.

Table 7. LEDs on the front panel

LED name	LED description
OK	This green LED is at the top left of the I/O module on the front panel and indicates that the module is working properly.
! (I/O module fault)	This amber LED is at the top right of the I/O module on the front panel. This LED indicates that the I/O module has a fault. If the I/O module fails the POST, this fault LED is lit.
External port logged-in (LOG)	There are six green external port logged-in (LOG) LEDs. When one of these LEDs is lit, it indicates that there is a connection (or link) to a device on that port.
External port activity (TX/RX)	There are six green external port activity (TX/RX) LEDs. When one of these LEDs flashes, it indicates that data is being received or transmitted (that is, activity is occurring) on that port. The flash frequency is proportional to the amount of traffic on that port.
External port fault (!)	There are six amber external port fault (!) LEDs. When an external port fault LED is lit, it indicates that the external port has failed the internal, external, or online port diagnostics tests.

Operating environment

The environment must meet the following temperature and altitude requirements:

- Operating:
  - 10 to 52 °C (50 to 125 °F) at an altitude of 0 to 914 m (0 to 3,000 ft)
  - 10 to 49 °C (50 to 20 °F) at an altitude of 0 to 3,000 m (0 to 10,000 ft)
- Non-operating:
  - -40 to 65 °C (-40 to 149 °F) at an altitude of 0 to 12,000 m (0 to 39,370 ft)

The environment can have the following humidity levels:

- Operating: 8% to 80%, noncondensing
- Non-operating: 5% to 80%, noncondensing

Related publications

For more information, see the following documents:

- QLogic 4 Gb Intelligent Pass-thru Module and 4 Gb SAN Switch Modules Getting Started Guide
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5071313

- QLogic 4 Gb Intelligent Pass-thru Module and 4 Gb SAN Switch Module for IBM Installation Guide
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5071303

- IBM US Announcement Letter
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS107-272

- *IBM BladeCenter Interoperability Guide*
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5073016

- IBM Redbooks publication *IBM BladeCenter Products and Technology*, SG24-7523
  http://www.redbooks.ibm.com/abstracts/sg247523.html

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